

ACB Compliance Determination for Norlite, Cohoes, NY

On-site CAA Inspection conducted on 3/17/15 – 3/19/15

by EPA's Nation Enforcement Investigations Center (NEIC) and Hans Buenning and Mozey Ghaffari (Region 2)

Areas of Noncompliance & Regulatory Citations	Total Number of Exceedance Minutes Identified for Both Kilns (2012-2014)	Notes	Recommendation	Anticipated Defenses and Government Response
<p>1) Norlite failed to meet the emission standard for dioxins and furans by exceeding the established operating parameter limits (OPLs) while hazardous waste was in the combustion chamber of the kilns.*</p> <p>Applicable OPL for this limit is a maximum heat exchanger exit temperature of 436F, as established by the 2010/2011 Comprehensive Performance Test (CPT).</p> <p>40 CFR § 63.1209(k)(1)(ii), 40 CFR § 63.1221(a)(1)</p>	<p>38,834 (approximately 4 weeks)</p>	<p>It appears that Norlite incorrectly runs their kilns using a maximum heat exchanger exit temperature of 453 F and an alarm set point of 448 F (see Table 2-4 on page 2-6 of the 2011 CPT report (Appendix A)). The initial 2010/2011 CPT under the revised standards of MACT Subpart EEE show that the final operating limit should be 436 F (See Table 2-3 on page 2-5 (Appendix B) and Table 4-12 on page 4-16 of the April 2011 Notice of Compliance (NOC) (Appendix C)). The NEIC analysis shows that the exceedances are below 453 F, but above the 436 F limit. The 453 F value appears to be taken from Norlite's Part 373 (RCRA) permit.</p>	<p>[REDACTED]</p>	<p>[REDACTED]</p>

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Areas of Noncompliance & Regulatory Citations	Total Number of Exceedance Minutes Identified for Both Kilns (2012-2014)	Notes	Recommendation	Anticipated Defenses and Government Response
<p>2) Norlite failed to meet the emission standard for HCl/CL₂ and PM by exceeding the established OPLs while hazardous waste was in the combustion chamber of the kilns.*</p> <p>An applicable OPL for these limits is a minimum venturi scrubber pressure drop of 6.1 inch w.c., as established by the 2010/2011 CPT.</p> <p>40 CFR § 63.1209(m)(1)(i)(A), 40 CFR § 63.1209(o)(3)(i) 40 CFR § 63.1221(a)(6), 40 CFR § 63.1221(a)(7)</p>	<p>1,589,299 (approx. 37 months)</p>	<p>It appears that Norlite incorrectly runs the venturi scrubber using a minimum scrubber pressure drop limit of 2.9 inch w.c. and an alarm set 3.5 inch w.c. (see Table 2-4 on page 2-6 of the 2011 CPT report (Appendix A)). The initial CPT under the revised MACT Subpart EEE standard shows that the final operating limit is 6.1 inch w.c. (See Table 2-3 on page 2-5 (Appendix B) and Table 4-13 on page 4-16 of the April 2011 NOC (Appendix C)). The NEIC analysis shows that all but a handful of the exceedances are above 2.9 inch w.c. The 2.9 inch w.c. value appears to be taken from Norlite's Part 373 (RCRA) permit. Both kilns were practically running in continuous non-compliance with this operating limit from 2012-2014.</p>	<p>[REDACTED]</p>	<p>[REDACTED]</p>

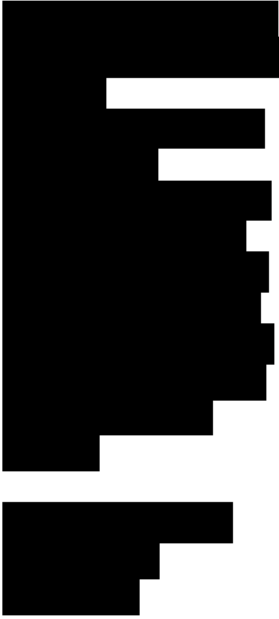

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Areas of Noncompliance & Regulatory Citations	Total Number of Exceedance Minutes Identified for Both Kilns (2012-2014)	Notes	Recommendation	Anticipated Defenses and Government Response
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Areas of Noncompliance & Regulatory Citations	Total Number of Exceedance Minutes Identified for Both Kilns (2012-2014)	Notes	Recommendation	Anticipated Defenses and Government Response
<p>3) Norlite failed to meet the emission standard for PM by exceeding the established OPL while hazardous waste was in the combustion chamber of the kilns.*</p> <p>An applicable OPL for this limit is a minimum venturi scrubber tank level of 58% of the height, as established by the 2010/2011 CPT.</p> <p>40 CFR § 63.1209(m)(1)(i)(B)(4), 40 CFR § 63.1221(a)(7)</p>	<p>1,828,032 (approx. 42 months)</p>	<p>It appears that Norlite incorrectly runs their scrubber using a minimum scrubber tank liquid level limit of 43% height. The alarm value for the waste feed cutoff for this parameter does not appear to be listed in the April 2011 NOC or the 2013 confirmatory test report. The initial comprehensive performance test shows that the final operating limit is actually 58% height (See Table 2-3 on page 2-5 (Appendix B) and Table 4-13 on page 4-16 of the April 2011 NOC Appendix C)). The NEIC analysis shows that all the exceedances are all above 43% height (but below the actual limit of 58% height). This 43% value does not appear in the 2011 CPT report, but is listed in the 2013 confirmatory performance test report (see page 4-2 and 4-4 (Appendix E)). Both kilns were practically running in continuous non-compliance with this operating limit from 2012-2014.</p>		

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Areas of Noncompliance & Regulatory Citations	Total Number of Exceedance Minutes Identified for Both Kilns (2012-2014)	Notes	Recommendation	Anticipated Defenses and Government Response
<p>4) Norlite failed to meet the emission standard for HCl/CL₂ and PM by exceeding the established OPLs while hazardous waste was in the combustion chamber of the kilns.*</p> <p>An applicable OPL for these limits is a minimum venturi scrubber liquid to gas ratio of 4.9 gal/10³ ft³, as established by the 2010/2011 CPT.</p> <p>40 CFR § 63.1209(m)(1)(i)(C), 40 CFR § 63.1209(o)(3)(v) 40 CFR § 63.1221(a)(6), 40 CFR § 63.1221(a)(7)</p>	<p>12,903 (approximately 9 days)</p>	<p>It appears that Norlite incorrectly runs their scrubber using a minimum scrubber liquid to gas ratio of 4.0 gal/10³ft³ (see Table 4-3 on page 4-4 of the confirmatory performance test report (Appendix E)). The alarm value for the waste feed cutoff for this parameter does not appear to be listed in the April 2011 NOC or the 2013 confirmatory report. The 2010/2011 NOC shows that the final operating limit is 4.9 gal/10³ ft³ (See Table 2-3 on page 2-5 and Table 4-13 on page 4-16 of the April 2011 NOC). The NEIC analysis shows that all of the exceedances are above 4.3 gal/ft³ (but below the actual limit of 4.9 gal/ft³).</p>		

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Areas of Noncompliance & Regulatory Citations	Total Number of Exceedance Minutes Identified for Both Kilns (2012-2014)	Notes	Recommendation	Anticipated Defenses and Government Response
<p>5) Norlite failed to meet the requirement to conduct an initial CPT on Kiln 2 for the 2005 revised MACT Subpart EEE standards.*</p> <p>40 CFR § 63.1207(c)(1)</p>	<p>1 missed test for Kiln 2</p>	<p>The initial CPT in 2010/2011 used to establish the OPLs under the revised 2005 standards for MACT Subpart EEE was only conducted for Kiln 1. Kiln 2 is designed to be similar or possibly identical to Kiln 1 and, according to Norlite representatives, it is cost-prohibitive to conduct a comprehensive performance test on both kilns. The CPT test plan submitted to NYSDEC (6/29/09 revision) outlines Norlite's protocol to only test Kiln 1 and apply the results for both kilns, unless the emission results are within 25% of any standard. NYSDEC approved this test plan on 8/10/10. Norlite may be required to conduct a comprehensive performance test on both kilns pending review.</p>		

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* For evidence, see NEIC October 19, 2015 Final Inspection Report

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continue to be monitored during a cutoff event. The waste feed can be restarted only after each of the above AWFCO conditions is satisfied.

Testing of the automatic waste feed cutoff system is conducted in accordance with requirements delineated in 40 CFR 264.347(c) and as outlined in Permit Module VII, Section E (Monitoring and Inspection), paragraph (3). Briefly, this consists of monthly testing of the AWFCO system and all associated alarms. Permit requirements also include continuing testing performed on at least one system parameter on a random basis at least once every 7 days to verify proper operation of the control valves. Actual AWFCO events fulfill the weekly testing requirement.

Table 2-4 AWFCO Parameters and Operating Limits

Process Parameter	Units	Basis ^a	Current Alarm Set Point	Current AWFCO Limit
LLGF Feed Rate	gpm	HRA	9.0	> 10.3
Pumpable LLGF Feed Rate	gpm	HRA	9.0	> 10.3
Shale Feed Rate	tph	HRA	21	22
Minimum Back-end Temperature	°F	HRA	910	< 896
Maximum Back-end Temperature	°F	HRA	1,010	> 1,030
CO Concentration at the Baghouse Outlet Corrected to 7% O ₂	ppm, dry basis	HRA	60	> 100
Stack Gas Flowrate	Wet scfm	HRA	44,500	> 45,000
Kiln Pressure	in. w.c.	INST	- 0.08	> - 0.05
Minimum Baghouse Pressure Drop	in. w.c.	HRA	5.6	< 5.1
Scrubber Water Recirculation Rate	gpm	HRA	194	< 180
Heat Exchanger Outlet Temperature	°F	HRA	448	> 453
Maximum Baghouse Inlet Temperature	°F	HRA	390	> 399
Minimum Lime Feed Rate	lb/hr	N/A	290	< 270
Minimum Recirculation Tank pH	pH	HRA	8.2	< 8.0
Minimum Venturi Pressure Drop	in. w.c.	HRA	3.5	< 2.9
Minimum Ducon Unit Pressure Drop	in. w.c.	HRA	2.0	< 1.5
Scrubber Water Blow Down	gpm	HRA	17	< 16.2
LLGF Line Pressure	psig	HRA	40	< 35
LLGF Atomization Pressure	psig	HRA	60	< 52

^a HRA = Hourly Rolling Average; INST = Instantaneous

Note: Values in this table represent a combination of RCRA and MACT limits

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Table 2-3 Final OPLs Established to Ensure MACT Compliance

Kiln Operating Parameters	Units	CPT Test Results			How Set	MIN or MAX	Cond. Used	Final OPL
		C2	C1RT	C1A				
Process & CEM Parameters --								
Total (and Pumpable) LLGF Feed	gpm	10.3	10.3	10.5	(a)	MAX	C1A	10.5
Kiln Production Rate (Shale Feed)	tph	22.8	23.6	23.6	(a)	MAX	C2	22.8
LLGF Atomization Pressure	psi	60.7	37.7	35.9	(b)	MIN	C1A	35.9
Back End Temperature	°F	990	895	895	(c)	MIN	C1A	895
Heat Exchanger Exit Temperature	°F	450	434	436	(c)	MAX	C1A	436
Flue Gas Flowrate	wet scfm	35,691	34,425	45,625	(c)	MAX	C1A	45,625
CO Conc. @ 7% O ₂	ppm	41.7	34.5	45.5	(d)	MAX	N/A	100
APCS Parameters --								
Baghouse Inlet Temperature	°F	400	386	383	(c)	MAX	C2	400
Venturi Pressure Drop	in. w.c.	6.1	6.2	8.6	(c)	MIN	C2	6.1
Scrubber Recirculation Rate	gpm	174.7	172.7	171.1	(c)	MIN	C2	174.7
Scrubber Blowdown Rate	gpm	14.6	13.9	14.1	(c)	MIN	C2	14.6
Scrubber Liquid Ph	pH	8.1	8.0	8.0	(c)	MIN	C2	8.1
Scrubber Tank Liquid Level	% Ht	58.0	56.5	56.7	(c)	MIN	C2	58.0
Scrubber Liquid to Gas Ratio	gal / 10 ³ ft ³	4.9	5.0	3.8	(c)	MIN	C2	4.9
Lime Feed Rate	lb/hr	250	270	270	(c)	MIN	C2	250
Lime Carrier Fluid Flow Rate	scfm	151.8	150.8	150.1	(c)	MIN	C2	151.8
Constituent Feed Rates --								
Total Chlorine	lb/hr	119.2	93.4	119.2	(c)	MAX	C2	119.2
Total SVM (Cd & Pb)	lb/hr	6.56	1.26	1.68	(c)	MAX	C2	29.3
Total LVM (As + Be + Cr)	lb/hr	6.46	4.74	5.03	(c)	MAX	C2	16.6
Total Pumpable LVM	lb/hr	2.86	0.85	1.17	(c)	MAX	C2	5.55
Total Mercury	lb/hr	0.0109	0.0018	0.0022	(c)	MAX	C2	0.036

- (a) Average of the maximum hourly rolling average for each run
(b) Based on manufacturer recommendation and Norlite operating experience
(c) Average of the test run averages. For metals, also based on extrapolation; see Table 4-11 and associated text.
(d) Regulatory citation

2.2.5 Automatic Waste Feed Cutoff Limits

Norlite's LWAK systems continuously operate with an automatic waste feed cutoff (AWFCO) system to ensure compliance with all applicable operating and feed rate limits. The AWFCO system triggers a waste feed cutoff whenever any of the following conditions exist:

- when an OPL is exceeded;
- when an emission standard monitored by a CEMS (i.e., carbon monoxide) is exceeded;
- when the span value of any continuous monitoring system (CMS) detector (except a CEMS) is met or exceeded;
- upon malfunction of a CMS; and
- when any component of the AWFCO system fails (manual shutdown).

Table 2-4 lists the AWFCO limits and set points (representing a combination of RCRA and MACT limits) that will become operational upon submittal of this NOC. The waste feed will be automatically shut off whenever one of the set points is exceeded. Each of these operating parameters will

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Table 4-12 Operating Parameter Limits Established for the Combustion System

Process Parameter	Units	MACT OPL
Maximum total (and pumpable) hazardous waste feed rate	gpm	10.5
Minimum LLGF atomization pressure	psig	35.9
Minimum kiln back-end temperature	°F	895
Maximum kiln hood pressure	in. w.c.	(a)
Maximum heat exchanger exit temperature	°F	436
Maximum flue gas flow rate	wet scfm	45,625
Maximum kiln production (shale feed) rate	tph	22.8
Maximum total chlorine feed rate	lb/hr	119.2
Maximum total mercury feed rate	lb/hr	0.036
Maximum total LVM (As, Be & Cr) feed rate	lb/hr	16.6
Maximum total pumpable LVM (As, Be & Cr) feed rate	lb/hr	5.55
Maximum total SVM (Cd & Pb) feed rate	lb/hr	29.3
Maximum CO concentration corrected to 7% oxygen	ppm	100

(a) See text for discussion

Table 4-13 Operating Parameter Limits Established for the APCs

Process Parameter	Units	MACT OPL
Maximum baghouse inlet temperature	°F	400
Minimum venturi pressure drop	in. w.c.	6.1
Minimum scrubber blowdown rate	gpm	14.6
Minimum scrubber tank liquid level	% of tank height	58
Minimum scrubber recirculation rate	gpm	174.7
Minimum scrubber liquid to gas ratio	gal/10 ³ ft ³	4.9
Minimum scrubber liquid pH	pH units	8.1
Minimum dry sorbent feed rate	lb/hr	250
Minimum dry sorbent carrier fluid flow rate	cfm	151.8

Appendix D

Buenning, Hans

From: Tita LaGrimas <Tita.LaGrimas@tradebe.com>
Sent: Tuesday, October 13, 2015 12:58 AM
To: Buenning, Hans
Cc: Ghaffari, Mozafar; Tim Lachell; Patel, Harish
Subject: RE: Call to Discuss Norlite Data
Attachments: Norlite 2011 CPT OPL Excerpts.pdf; Norlite 2013 CfPT OPL Excerpts.pdf

Good evening Hans, Mozafar and Harish,

Norlite has reviewed the questions you have asked regarding the operating parameter limits (OPLs) in the 2011 CPT/NOC report and the 2013 CfPT report. We do not find any discrepancies with the reported figures, our explanation follows:

- Table 2-3 of the 2011 CPT Report presents the MACT OPLs that were established during the 2010/2011 CPT.
- Table 2-4 of the 2011 CPT Report presents a combination of the MACT OPLs and RCRA operating limits that were, and still are currently in place at the facility due to the 2004 CPT/NOC Report and the Part 373 permit.
- Despite the language under paragraph 2.2.5, the OPLs established by the CPT are not self-implementing. NYSDEC acceptance of the 2011 CPT/NOC Report is required and a Part 373 permit modification is required to change any of the respective limits. Neither of these actions has occurred which is why the facility is operating under older, though no less protective, operating limits.
- Regarding the 2014 CfPT report, the same answer applies. Older limits are presented because the facility has not received official acceptance of the 2011 CPT/NOC Report.

Thank you for the opportunity to address your questions.

Please feel free to email or call my cell 219.746.8713 if you have any additional questions.

Respectfully,

Tita

Tita LaGrimas
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From: Buenning, Hans [mailto:Buenning.Hans@epa.gov]
Sent: Thursday, October 01, 2015 3:08 PM
To: Tita LaGrimas
Cc: Ghaffari, Mozafar; Tim Lachell; Patel, Harish
Subject: RE: Call to Discuss Norlite Data

Appendix E

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Table 4-1 Process Data Summary for the May 2013 CfPT

MACT OPLs ^(a)	Units	MACT Limit	Feb 2012 - Jan 2013 Average	CfPT Target	CfPT Actual
Max. LLGF Feed Rate	gpm	10.3	8.22	9.0	9.64
Min. Kiln Backend Temperature	°F	896	937	910	910
Max. Kiln Production (Shale Feed) Rate	tph	22.0	15.1	19.0	20.1
Max. Flue Gas Flowrate	wet scfm	45,000	28,044	38,000	36,197
Max. Heat Exchanger Exit Temperature	°F	453	405	420	420
Max. CO conc. @ 7% Oxygen	ppm	100	43.6	50	40.9
Other Parameters					
Min. LLGF Atomization Pressure	psig	52.0	77.3	NA	82.6
Max. Total Chlorine Feed Rate	lb/hr	82.3	NA	60	73.2
Max. Total Mercury Feed Rate	lb/hr	0.036	NA	NA	NA
Max. Total LVM (As, Be & Cr) Feed Rate	lb/hr	16.6	NA	NA	NA
Max. Total Pumpable LVM Feed Rate	lb/hr	5.55	NA	NA	NA
Max. Total SVM (Cd & Pb) Feed Rate	lb/hr	29.3	NA	NA	NA
Max. Baghouse Inlet Temperature	°F	399	376	NA	385
Min. Venturi Pressure Drop	in. w.c.	2.9	6.7	NA	6.1
Min. Scrubber Blowdown Rate	gpm	15.0	19.5	NA	19.2
Min. Scrubber Tank Liquid Level	% Ht.	43	57	NA	56
Min. Scrubber Recirculation Rate	gpm	180	211	NA	218
Min. Scrubber Liquid to Gas Ratio	gal/10 ³ ft ³	4.0	11.5	NA	6.0
Min. Scrubber Liquid pH	pH units	8.0	8.5	NA	8.5
Min. Dry Sorbent Feed Rate	lb/hr	270	300	NA	300
Min. Dry Sorbent Carrier Fluid Flow Rate	cfm	152	213.2	NA	220.8

^(a) MACT operating parameter limits established to ensure compliance with the PCDD/PCDF emission standard.

NA = Not applicable for the CfPT

4.3 MACT Operating Parameter Limits

The purpose of a MACT confirmatory performance test is only to confirm compliance with the PCDD/PCDF emission standard through operation under normal parameters as established by reviewing 12 months' of prior operating data. The CfPT is not intended to re-establish any OPLs and as such, all operating limits previously established during the October 2010 / January 2011 CPT remained in effect during the CfPT and will remain in place until the next CPT. A summary of the current set of OPLs used to ensure continuous compliance with all MACT emission standards is presented below in Tables 4-2 and 4-3.

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Table 4-3 Current MACT Operating Parameter Limits for the APCS

Process Parameter	Units	Avg. Period (a)	How Limit Established (b)	Current Limit
Maximum Baghouse Inlet Temperature	°F	1-hr (HRA)	Avg. of the test run averages	399
Minimum Venturi Pressure Drop	in. w.c.	1-hr (HRA)	Avg. of the test run averages	2.9
Minimum Scrubber Blowdown Rate	gpm	1-hr (HRA)	Avg. of the test run averages	15.0
Minimum Scrubber Tank Liquid Level	% Ht.	1-hr (HRA)	Avg. of the test run averages	43
Minimum Scrubber Recirculation Rate	gpm	1-hr (HRA)	Avg. of the test run averages	180
Minimum Scrubber Liquid to Gas Ratio	gal/10 ³ ft ³	1-hr (HRA)	Avg. of the test run averages	4.0
Minimum Scrubber Liquid pH	pH units	1-hr (HRA)	Avg. of the test run averages	8.0
Minimum Dry Sorbent Feed Rate	lb/hr	1-hr (HRA)	Avg. of the test run averages	270
Minimum Dry Sorbent Carrier Fluid Flow Rate	cfm	1-hr (HRA)	Avg. of the test run averages	152

Notes:

(a) HRA = hourly rolling average